

EPIPHRAGMOPHORA CALIFORNIENSIS, AND THE SHELLS COMMONLY  
CALLED VARIETIES THEREOF.

BY HENRY M. EDSON.

My attention was first attracted to the complexity of the nomenclature of this group two years ago, while trying to identify a shell which afterwards proved to be a deformed *Epip. nickliniana* Lea. Since then I have made a very careful study of the group, and have collected over the entire distribution area, and particularly at the type localities.

Dr. H. A. Pilsbry's<sup>1</sup> catalogue of American land shells was the last work of any scientific value dealing with these species, so I have taken that as a base from which to work, and will discuss separately each of the varieties he retained, and afterwards give my conclusions. The following shells were retained in his list:

*Epip. californiensis* Lea.

*Epip. californiensis*, var. *nickliniana* Lea.

*Epip. californiensis*, var. *anachoreta* W. G. B.

*Epip. californiensis*, var. *ramentosa* Gld.

*Epip. californiensis*, var. *bridgesi* Newc.

*Epip. californiensis*, var. *diabloensis* J. G. C.

EPIPHRAGMOPHORA CALIFORNIENSIS Lea.

This is a species of the maritime region of the Upper Sonoran faunal belt, of very limited distribution. It is found most abundantly at Point Pinos, Monterey Co., collected sparingly at Point Cypress and Point Lobos, and at a few intermediate localities covering a distance of about twenty miles. It is usually found in the loose sand at the base of plants and small shrubs; I have counted as many as one hundred collected around the roots of a purple sea aster. The young shells are conical with closed umbilicus.

EPIP. CALIFORNIENSIS, var. NICKLINIANA Lea.

This is a subspecies of the wooded zone of the Upper Sonoran belt, but overlaps into the Humid Transitional. It shows great variation, which fact was early recognized by Dr. Newcomb.<sup>2</sup> It is widely

<sup>1</sup> NAUTILUS, xi, 1897.

<sup>2</sup> Amer. Jour. Conch., I, p. 342, 1865.

distributed, extending from north of Santa Rosa, south on both sides of San Francisco bay to Monterey on the coast, and San Benito Co. in the interior.

In a shell of so large a distribution it stands to reason that there will be variation, caused by lack of lime for shell-making in some cases, and in other cases to lack of moisture. It has been my experience that the shells collected in wet places were larger, with a more open umbilicus, than those from the more arid regions.

That *nickliniana* Lea is a variety of *californiensis* Lea I can find no proof. The young of *californiensis* are high-spired with closed umbilicus, the shells do not show the reticulated surface to any extent, and it is strictly a maritime species; while the young of *nickliniana* are planulate with an open umbilicus, the shells always show the reticulated surface, and it inhabits the moister spots in the wooded zone.

That *nickliniana* and *ramentosa* are identical no one can doubt who has studied and collected them. I have in my collection a set of twenty *nickliniana* from a small canyon in the foothills back of Palo Alto, from which it is possible to select as many different forms, running from a high spire with the lip almost entirely reflected over the umbilicus to low spire with a widely-open umbilicus. The reticulated surface and the purplish color of the nacre inside the aperture are present in all of the forms of *nickliniana*. In some localities the color band is obsolete.

*E. nickliniana* might be called the typical mollusk of the Upper Sonoran fauna belt in the central portion of the Coast Range system.

EPIP. CALIFORNIENSIS, var. ANACHIORETA W. G. B.

This was a deformed *nickliniana*, and was so recognized by Mr. Binney<sup>1</sup> in later writings.

EPIP. CALIFORNIENSIS, var. RAMENTOSA Gld.

A small form of *nickliniana* from Bolinas, which does not differ from *nickliniana* except in size. I have a set from the same locality, which run from large to small, with both open and closed umbilicus.

EPIP. CALIFORNIENSIS, var. BRIDGESI Newc.

Described from a solitary dead shell from San Pablo, in which

<sup>1</sup> Bull. 28, U. S. N. M., p. 132, 1885.

Dr. Newcomb failed to recognize the connecting link between *ramentosa* and *nickliniana*. He says, "Its nearest approach to any described California species is to *H. ramentosa* Gld., which is much smaller in size, more solid in structure, with a more depressed spire, lighter color and more scaly granulations; from *H. nickliniana* Lea it is readily distinguished by its large umbilicus and difference in form."

Mr. Binney<sup>2</sup> placed it in the synonymy of *ramentosa*.

EPIP. CALIFORNIENSIS, var. DIABLOENSIS J. G. C.

This was another solitary dead shell, in the California State Collection, which was supposed<sup>2</sup> to have been collected in the Mount Diablo range by Prof. Brewer of the Geological Survey, who crossed the range near New Idria, in lat. 36° 30', a distance of about two hundred miles south of Mount Diablo, which later writers have given as the type locality of *diabloensis*.

I fail to see anything in Cooper's description which in any way shows an affinity with this group, and suspect that the specimen was a form of *traski*. I have *traski* from Coalinga, which is about twenty miles south of New Idria, that fit the description very well. The shell figured by Binney,<sup>4</sup> Fig. 113, seems to me to be identical with the one figured as *bridgesi*, Fig. 109, and most certainly the shells from the vicinity of Mount Diablo are not the *diabloensis* of Cooper.

A list of the principal synonymy follows:

EPIP. CALIFORNIENSIS Lea.

*Helix californiensis* Lea, Obs., II, 99, 1839.

*Helix vincta* Val., Voy de la Venus, Moll. pl. I, fig. 2.

EPIP. NICKLINIANA Lea.

*Helix nickliniana* Lea, Obs., II, 100, 1839.

*Helix californiensis* Reeve, Con. Icon., no. 66.

*Helix arboretorum* Val., Voy de la Venus, pl. 1, fig. 3.

<sup>1</sup> Proc. Cal. Acad. Sci., II, p. 91, 1861.

<sup>2</sup> Bull. 28, U. S. N. M., p. 133, 1885.

<sup>3</sup> J. G. Cooper, Proc. Cal. Acad. Sci., III, p. 260, 1866.

<sup>4</sup> Bull. 28, U. S. N. M., p. 134, 1885.

- Helix nemorivaga* Val., Voy de la Venus, pl. 1, fig. 1.  
*Helix ramentosa* Gld., Proc. Bost. Soc. Nat. Hist., VI, 11, 1845.  
*Helix anachoreta* W. G. B., Proc. Phil. Acad., 185, 1857.  
*Helix reticulata* Pfr., Mal. Blatt., 87, 1857.  
*Helix bridgesii* Newc., Proc. Cal. Acad., II, p. 91, 1866.  
*Arionta californiensis*, var. *nickliniana* W. G. B., Bull. 28, 1885.

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EXTRACTS FROM THE LOG OF THE EOLIS.

BY JOHN B. HENDERSON, JR.

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The following extracts taken from the log-book of the *Eolis* are offered to the NAUTILUS readers at the editor's suggestion. The *Eolis* is a fifty-foot motor cruising yacht built by the writer especially for the purpose of dredging, and is provided with hoisting machinery, etc. At the time of these entries in the log the boat was cruising in south Florida waters, with Key West, and later, Tortugas, as headquarters. Mr. George H. Clapp, of Pittsburgh, was on board during both cruises. The passages from the log are taken quite at random :

"April 18, 1910" (in the Hawk Channel). ". . . coming in sight of Loue Key, a mere patch of coral sand on an exposed bit of the outer Florida Reef, we decide to try for some reef collecting, the tide being favorable. We run the *Eolis* almost to the key on the lee side, but with breakers all about us. The Captain, Clapp and I go ashore in the tender, leaving the *Eolis* rolling in uncomfortably shoal water. It is difficult here to record the first impressions of this our first experience on a tropical reef. At last the fine ones are to be had for the picking. In nervous haste we turn over the coral slabs and inspect their under sides. There they are, bright, shining, alive and beautiful: *Cypraea cinerea* and *spurca*, *Conus mus* and *floridana*, *Mitra barbaderis* and *nodulosa*, one excellent specimen of *Mitra fergusonii*, *Cassis*, *Pisania*, *Trivia*, *Oliva*, *Olivella*, and so on. The wash of the surf over the coral rocks where we are collecting, deprives us, I am sure, of many specimens, both by hiding them from sight and by washing them away. . . . Our catch, in two rather strenuous hours' work, is amazing in quantity and quality . . . arrive in Key West at 3 p. m."

"April 19, 1910" (Key West). "4 a. m.—Start for outer